

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-19. (Canceled)

20. (New) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-cylinder internal combustion engine, the device comprising:

injection amount control means for changing a fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

computation means for determining an amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular one of the cylinders is changed by the injection amount control means;

output means for outputting the torque or rotation speed change amount determined by the computation means as an index value that indicates a degree of intake air amount inaccuracy of the particular one of the cylinders;

comparison means for comparing a predetermined reference value with the amount of the change that occurs when the injection amount control means changes the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation; and

judgment means, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the degree of intake air amount inaccuracy of the particular one of the cylinders.

21. (New) The intake air amount variation detector according to claim 20, wherein:

the comparison means compares a predetermined reference value with the amount of a change that occurs when the injection amount control means increases the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation; and

the judgment means, when the amount of the change is greater than the reference value, judges that a permissible level is exceeded by an undue increase in the intake air amount in the particular one of the cylinders.

22. (New) The intake air amount variation detector according to claim 20, wherein:

the comparison means compares the predetermined reference value with the amount of a change that occurs when the injection amount control means decreases the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation; and

the judgment means, when the amount of the change is smaller than the reference value, judges that a permissible level is exceeded by an undue decrease in the intake air amount in the particular one of the cylinders.

23. (New) The intake air amount variation detector according to claim 20, wherein the injection amount control means periodically increases or decreases the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation by a predetermined amount; and wherein the computation means extracts a change component having a same frequency as a fuel injection amount change frequency for the particular one of the cylinders from a torque or rotation speed change, and determines the amplitude of the extracted change component as the amount of the change.

24. (New) The intake air amount variation detector according to claim 23, wherein the injection amount control means periodically changes the fuel injection amount at a frequency outside a range of human perception.

25. (New) The intake air amount variation detector according to claim 20, further comprising:

conversion means for converting the degree of intake air amount inaccuracy of the particular one of the cylinders to intake valve operating angle inaccuracy of the particular one of the cylinders and/or intake valve lift amount inaccuracy of the particular one of the cylinders.

26. (New) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-one of the cylinders internal combustion engine, the device comprising:

first injection amount control means for changing the fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to an increased amount;

first computation means for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular one of the cylinders is changed by the first injection amount control means;

second injection amount control means, which, when the torque or rotation speed change amount determined by the first computation means is not greater than a predetermined reference value, decreases the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation;

second computation means for determining the amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular one of the cylinders is changed by the second injection amount control means;

output means for outputting the torque or rotation speed change amount determined by the first computation means and the torque or rotation speed change amount determined by the second computation means as index values that indicate a degree of intake air amount inaccuracy of the particular one of the cylinders;

comparison means for comparing a predetermined reference value with the amount of the change that occurs when the first or second injection amount control means changes the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation; and

judgment means, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the degree of intake air amount inaccuracy of the particular one of the cylinders.

27. (New) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-one of the cylinders internal combustion engine, the device comprising:

an injection amount control unit for changing a fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to either an increased amount or a decreased amount;

a computation unit for determining an amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular one of the cylinders is changed by the injection amount control unit;

an output unit for outputting the torque or rotation speed change amount determined by the computation unit as an index value that indicates a degree of intake air amount inaccuracy of the particular one of the cylinders;

a comparison unit for comparing a predetermined reference value with the amount of the change that occurs when the injection amount control unit changes the fuel

injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation; and

a judgment unit, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the degree of intake air amount inaccuracy of the particular one of the cylinders.

28. (New) An intake air amount variation detector for detecting the intake air amount variations among cylinders of a multiple-one of the cylinders internal combustion engine, the device comprising:

a first injection amount control unit for changing the fuel injection amount for a particular one of the cylinders from an injection amount for stoichiometric operation to an increased amount;

a first computation unit for determining an amount of a torque or rotation speed change that occurs when the fuel injection amount for the particular one of the cylinders is changed by the first injection amount control unit;

a second injection amount control unit, which, when the torque or rotation speed change amount determined by the first computation unit is not greater than a predetermined reference value, decreases the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation;

a second computation unit for determining the amount of the torque or rotation speed change that occurs when the fuel injection amount for the particular one of the cylinders is changed by the second injection amount control unit;

an output unit for outputting the torque or rotation speed change amount determined by the first computation unit and the torque or rotation speed change amount determined by the second computation unit as index values that indicate the degree of intake air amount inaccuracy of the particular one of the cylinders;

a comparison unit for comparing a predetermined reference value with the amount of the change that occurs when the injection amount control unit changes the fuel injection amount for the particular one of the cylinders from the injection amount for stoichiometric operation; and

a judgment unit, which, when comparing the change to the reference value, judges that a permissible level is exceeded by the degree of intake air amount inaccuracy of the particular one of the cylinders.